



P. O. Drawer FP  
Mississippi State, MS 39762  
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MPCA  
ATTORNEY GENERAL

Mr. Dennis Coyne  
Special Assistant Attorney General  
State of Minnesota  
1935 West County Road B-2  
Rossville, MN 55113

Dear Dennis:

In compliance with your request of June 9, I have a series of questions that relate to the operation of Reilly Tar's wood-preserving and tar-distillation plants at St. Louis Park.

These questions are designed to determine operating parameters from which a better estimate of wastewater discharge and pollutant loadings than currently available can be calculated. The last section deals specifically with pollutant discharges and are based largely on documents supplied by Steve Reed. There are a few duplicate questions among the ~~six~~ <sup>five</sup> sections covered.

I have received no further information on the date for Mr. Finch's deposition. I shall call Steve tomorrow (June 16).

Sincerely,

Warren S. Thompson  
Consultant

WST:bw

Enclosures

Wood-Treating Process

Documents (No. Stamp 200101) provided by Reilly Tar and Chemical Corporation refer to the three major wood-preserving processes: Bethel (full-cell) and Rueping and Lowry (empty-cell).

- (a) Which process was used most frequently? Rueping?
- (b) What was the principal product produced?
- (c) For what product was the full-cell process used?
- (d) Were the two empty-cell processes used interchangeably?
- (e) What process was used to treat utility poles? Railroad ties (ties)?
- (f) What were the principal species used for ties?
- (g) Was any seasoning or conditioning method other than air drying used with ties? If so, what methods were used?
- (h) (If Boultonizing were used) what percent of the tie production was conditioned by the Boulton process?
- (i) What was the average time required for Boultonizing?
- (j) What species of poles did the company treat?
- (k) (If pine) were these poles steam conditioned?
- (l) (If yes) what was the average period of steam conditioning?
- (ll) Was closed steaming or open steaming used?
- (m) (If Douglas-fir) were these poles seasoned by Boultonizing?

- (n) (If yes) what was the average time required for Boultonizing?
- (o) (See 1-C, if answer is piling). What species of piling were treated?
- (p) How were piling conditioned for treatment--air drying, steaming, Boulton process, or a combination of two of these?
- (q) What was the approximate annual production (cubic feet) of ties at St. Louis Park?
- (r) Were poles, piling, and other products treated routinely (weekly or monthly) or only occasionally?
- (s) What was the approximate annual production of poles?
- (t) Were timbers treated at the plant?
- (u) How large were these (e.g. 12" x 12", 12" x 16")?
- (v) What was the principal species?
- (w) How were they conditioned--air drying, steaming, Boultonizing?
- (x) Can you provide an estimate of monthly or annual production of timbers?
- (y) What was the target moisture content for ties, poles, and timbers that were air seasoned?
- (z) If any products (ties or poles) were Boultonized, what was the target moisture content?
- (aa) How was preservative retention and penetration determined?
- (ab) Did the plant have its own quality-control lab?

- (ac) Did plant customers have representatives on site to determine treatment quality for products they were purchasing?
- (ad) What equipment was available for quality-control purposes?
- (ae) How many charges were treated daily?
- (af) Was pre-steaming used with ties?
- (ag) (If yes) what was the average and maximum duration?
- (ah) How long was the pre-steaming period used to thaw frozen stock preparatory to treatment?
- (ai) AWPAs standards permit post-treatment steaming for many products. What period of post-steaming was used for ties? for timbers? for poles?
- (aj) How long was the post-treatment vacuum period?
- (ak) How long was the pressure cycle used with ties?
- (al) Was a different time under pressure required for poles? timbers?

### Preservatives

The same document (No. Stamp 200101) refers to several preservatives or preservative blends used at St. Louis Park.

- (a) What preservative was used to treat ties?
- (b) (If answer is 50:50 creosote-petroleum) was straight (#1) creosote ever used for ties?
- (c) What products were treated with #1 creosote?
- (d) Approximately how many gallons of creosote were used on site annually?
- (e) Was creosote-coal tar blends ever used as preservatives?
- (f) (If yes) what products were treated with such blends?
- (g) What percent of total creosote usage was represented by creosote-coal tar and creosote-petroleum blends?
- (h) What products were treated with creosote-penta solutions?
- (i) (Should be poles) was straight creosote ever used to treat poles?
- (j) What percentage penta was added to the creosote?
- (k) For how many years did the company use creosote-penta solutions?
- (l) Can you provide an estimate of the annual volume of such solutions used?
- (m) Please describe the creosote-arban solution used for Soo Line bridge timbers. What is Arban?
- (n) Was creosote-arban used for products other than bridge timbers?

- (o) Approximately what volume of this preservative did the company use annually?
- (p) Was penta-petroleum solutions ever used at St. Louis Park?
- (q) (If yes) what products were treated with this preservative?
- (r) Was zinc chloride ever used to treat ties or other products--either singly or in combination with creosote (Note: If so, the use probably predates Mr. Finch's tenure at the plant)?
- (s) Was all the creosote used at St. Louis Park produced on site?
- (t) How much creosote was produced monthly or annually at the tar distillation plant?
- (u) Was the company able to sell the excess creosote; that is, the unused volume?
- (v) In your memorandum of July 16, 1962 to Mr. Edwards entitled "Plant Efficiencies, Economies and Maintenance" (No. Stamp 100418-430) you report the status of the tankage at the St. Louis Park plant. Based on your report, several of the storage tanks were in need of repair. Is there any way you can estimate the loss of creosote from these tanks--either from leaks in the shell or through the heating coils with which some were equipped?
- (w) Was creosote stored in any underground tanks?

Wood-Treating Equipment

Wood-preserving equipment--retorts, work tanks, vacuum systems, etc. are mentioned in several memorandia gleaned from Reilly Tar files:

- (a) How many retorts were located at St. Louis Park?
- (b) What were their approximate diameter and length?
- (c) Were separate retorts used for the several preservatives employed by the company?
- (d) Was vacuum generated with a pump or with a steam ejector?
- (e) (Ejector) What was its capacity in terms of pounds of steam per hour?
- (f) Did one ejector serve all (if more than one) retorts?
- (g) (Vacuum pump) Was a single pump used?
- (h) Was the pump water cooled?
- (i) What was the source of the pressure required during the impregnation cycle--compressed air or pressure pump?
- (j) Was any of this equipment water-cooled?
- (k) What equipment was used to dehydrate creosote and other preservatives? Was the plant equipped with a dehydrator?
- (l) Were the retorts insulated?
- (m) Was this also true of work tanks and Rueping tanks?
- (n) Several references are made to two boilers in correspondence in company files. Were they jointly used for both the treating plant and the tar-distillation plant?

(o) What was the source of boiler makeup water?

(p) What was done with boiler blowdown and coil condensate?



Tar-Distillation Plant

Reilly Tar and Chemical Company has been a major producer of coal-tar distillates for many years.

- (a) How many tons of coal tar were processed monthly at the St. Louis Park plant?
- (b) What types of tars were used?
- (c) When did the plant stop processing water-gas tar?
- (d) Was the byproduct part of the plant still operating when you joined the company?
- (e) Do you know what the principal products were in addition to pitch and creosote?
- (f) How many stills were usually in operation?
- (g) Please describe how the distillation process worked at St. Louis Park.
- (h) Were large volumes of water used in condensers?
- (i) Was this water recycled or used on a once-through basis?
- (j) Were tar storage tanks heated with steam coils?
- (k) What was done with the condensate from the coils?
- (l) Was naphthelene recovered as a byproduct?
- (m) Was condensation of naphthelene vapors from discharge gases a common occurrence during cool weather?
- (n) Were any chemicals recovered from the wet cut?

- (o) Was chemical oil recovered after the byproduct part of the plant closed?
- (p) If not, what happened to this fraction?

### Sources of Pollution

Many references are made in company correspondence to process wastewater.

- (a) Approximately what was the flow in gallons per hour (minute) in the main drainage at the point where it left the plant property? (150-200 gpm total flow in 1938 - See Leshar affidavit, Exhibit D).
- (b) How much of this total flow was associated with the wood-preserving operation?
- (c) How was the condensate resulting from steam conditioning and pre- and post-treatment steaming processed?
- (d) Do you have any estimate of its volume in gallons per day?
- (e) Were analyses conducted on this waste stream at any time to determine its pollution loading; e.g. oil and grease content, phenol content, etc. (No. Stamp 219265).
- (f) What was the source of the cooling water for the condenser at the treating plant?
- (g) Was it a single-pass system, or was the cooling water recycled?
- (h) If it was recycled was the pond referred to in several letters and reports the point from which the cooling water was pulled and returned?
- (i) Was this the source pond from which boiler water was drawn?
- (j) How did boiler blowdown enter the waste system?
- (k) What chemicals, if any, were added to the boiler water to control scale buildup?

- (l) Reference is made in one document to a buildup of deposits in the wooden settling basin which, as I understand the flow, received wastewater from both this refinery and the treating plant. This buildup was attributed to the boiler blowdown water. What was in the blowdown that would account for these deposits? (Ac. No. 015424)
- (m) Was equipment cooling or seal water (air compressor, vacuum pump) recycled?
- (n) Was all water used in the two plants--boiler water included--taken from the single pond?
- (o) What was done with steam condensate from heating coils?
- (p) About how much wastewater was generated in the coal-tar distillation plant?
- (q) Of this amount, approximately what percentages came from the "wet cut?"
- (r) During the period of maximum production of pitch and other products at the plant, how much coal tar was processed per still charge?
- (s) How many still charges were completed per week?
- (t) It has been estimated that about 5 percent of coal-tar input was represented in the wet cut. Do you agree with this estimate?
- (NOTE: The plant processed about 400,000 gallons of coal tar per month (AC No. 401877). Assuming a weight of 10 pounds per gallon, the wet cut at 5 percent of total would equal about 25,000 gallons per month, or roughly 1000 gallons per work day.
- (u) How was the wet cut processed? Was it discharged as part of the effluent stream?
- (v) What chemicals, other than water, did it contain?

- (w) What was the source of water for the condensers in the tar-distillation plant?
- (x) What type condensers were these; were they shell-and-tube condensers?
- (y) Was creosote spillage that collected in the sumps under retort doors recovered and reused?
- (z) Were there major spillages of creosote at any time due to ruptured tanks or retorts?
- (aa) If so, what steps were taken to recover the oil and reuse it?
- (ab) There are several references in the files to spillage of tar resulting from ruptured tanks, explosions, and fires. What percentage of such spillage was recovered?
- (ac) How effective was the large settling basin (10' x 16' x 150') and sump (7' dia. x 9.5' high) in removing oils and other suspended materials from the wastewater stream?  
(No. Stamp 305167)
- (ad) Were analyses ever conducted to determine the efficiency of this system?
- (ae) How often were the sump and settling basin pumped out?
- (af) What was done with the recovered oil?
- (ag) In a memorandum to Mr. P. E. White from Mr. C. F. Leshar dated May 14, 1968 (Court file #015424), the following statement is made: "At the time of our observation last week, the level of solids in the settling pond was quite high, the conditioning of the baffling system in the pond is questionable, and the visual appearance and quantity of oil going out of the plant was terrible." Were the conditions described in 1968 by Mr. Leshar normal?
- (ah) Can we assume from his statement that free oil was leaving the plant that the settling basin was full of oil and other materials?

- (ai) The plant was located in a natural depression with drainage directed through the plant proper. How often did flooding occur? (No. Stamp 100255).
- (aj) Did flooding involve the settling basin and cooling pond?
- (ak) To what extent did the tar cistern contribute to total waste flow?
- (ak<sub>1</sub>) Were steam coils kept in a good state of repair?
- (ak<sub>2</sub>) Was coil condensate reused for boiler makeup water?
- (al) How was waste creosote and other distillates disposed of? Were they routinely sprayed on roadways and storage areas for dust and weed control? (No. Stamp 104148).
- (am) Approximately when was the straw filter installed?
- (an) How effective was it in removing free oil, based on visual comparison of influent and effluent?
- (ao) Photographs of the filter and area immediately adjacent to it show used straw filters discarded on the side of the drainage ditch. Was this the usual method of disposal?
- (ap) Did plant management ever install or consider installing equipment to remove emulsified oils from the wastewater?
- (aq) Did plant management ever consider installing equipment to remove dissolved materials other than or in addition to phenols?
- (aq<sub>1</sub>) One file memo of May 1, 1940 (No. Stamp 303040) refers to equipment installation for extracting phenols from the waste stream using neutral oil as the solvent. Was this operation in use when you moved to St. Louis Park? Was it in use in 1972 when the plant closed?

- (ar) Among various sources of wastewater listed in company correspondence, "water from tank 5 at treating plant" is included. What was tank 5 used for and how did it contribute to the pollution loading of the waste stream? (No. Stamp 30516).
- (as) A report prepared by a representative of Travelers Insurance Company (No. Stamp 215983) refers to the presence of creosote in the pond from which boiler makeup water was drawn. What was the source of this contamination?
- (at) What was the capacity of the two boilers in pounds of steam per hour?
- (at<sub>1</sub>) If no coil condensate were recovered, this source of water would probably add significantly to total wastewater flow. Can you estimate this flow component in gallons per day?
- (au) File documents indicate that water to the pond, from which makeup water was drawn, came from a 1000-foot-drip well. (No. Stamp 215481). Elsewhere it is reported that an air lift was used to obtain water from the well. What is an air lift and how does it work?
- (av) Was the air compressor used for this purpose used elsewhere in the plant's operations?
- (aw) If so, is it possible that contamination of the well was due in part to this dual use of equipment?  
(No. Stamp 305156).
- (ax) A memorandum in company files from you to Mr. Edwards dated July 15(?), 1962 (No. Stamp 100418-430), refers to heavy accumulation of oil in the pipe trenches that served the treating plant and the refinery. How often were these trenches cleaned out?
- (ay) Were steam and oil leaks common in pipes located in the pipe trenches?
- (az) What happened to the oil and water that accumulated in the trenches? Did the trenches discharge to the underground 8-inch drainage system?

- (ba) You also refer in the aforementioned memorandum to the presence of a hairline crack in one of the retort doors. Was this crack a source of oil loss during the pressure period?
- (bc) How would you characterize the general state of repair of tankage, plumbing, etc. at St. Louis Park during the last decade of the plant's operation?
- (bd) What is your estimate of the annual loss in gallons of tar and tar products, including creosote, that resulted from leaks, spills, etc.?
- (be) How often were retorts and tanks cleaned out?
- (bf) How were the materials removed during such cleaning operations disposed of?